

OPPORTUNITIES AND CONSTRAINTS IN ADVANCING RESEARCH MANAGEMENT: AN ACCOUNT OF GHANAIAN TERTIARY INSTITUTIONS

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ABSTRACT

What is new?	The objective was to assess the opportunities that abound and constraints that militate against the advancement of Research Management (RM) in policy advancement, sufficient resources and investment and highly trained Research Managers and Administrators in Ghanaian Tertiary Institutions (GTIs).
What was the approach?	A mixed methods survey with a concurrent triangular strategy method was employed. Questionnaires and interview guides were used in gathering data and a tree- stage analysis technique was used. Data were analyzed using Stata v16 into descriptive results. Ethical approval was

	sought from the Committee on Human Research Publication Ethics (CHPRE) of the Kwame Nkrumah University of Science and Technology, Kumasi (CHRPE/AP/453/21).
What is the academic impact?	The study showed that RM in GTIs offers opportunities to researchers and other clients through the services that research administrators and managers render. Among these services are searching funding opportunities, proposal development, interpreting the terms and conditions of grants, monitoring project budget during implementation, etc. RM is bedevilled with challenges despite efforts to navigate the RM pathway. These challenges include professional development plan, mentorship programme, technological infrastructure, and policies.
What is the wider impact?	The study established that there are RM opportunities that could be leveraged and there are factors that militate against the effective delivery of RM services in GTIs. The paper recommends a deeper appreciation and effective use of RM services, and the adoption of effective measures to address the constraints identified to maximize research output and impact in GTIs.
Keywords	Research Management, Research Administration, Opportunities, Challenges, Tertiary Institution.

INTRODUCTION

Globally, the extent to which Tertiary Institutions (TIs) have managed their research activities differ considerably from country to country. TIs are increasingly becoming accountable for their research output, not only to their respective governments but also to various funding agencies. An increasing proportion of TIs' research work is undertaken on a project-by-project basis, or as part of consortia with other research institutions (Spithoven et al., 2009).

Theoretically, a systematic review of research management (Derrick et al., 2014), confirmed that role-players outside of the profession were not clear on what research management actually is, what benefits it brings and how it can deliver within research contexts. This concern holds resonance across a number of boundary spanning and "nascent" worlds of work (Faulconbridge and Muzio, 2012; Whitchurch, 2008). Practitioners have also asked how one defines the fluidity and multiplicity of the work of research management, amidst

consideration of the tighter lines of self-regulation that are asked of within professions themselves (Faulconbridge and Muzio, 2012; Saks, 2012; Whitchurch, 2008).

Notwithstanding these posited arguments, management of research and innovation has emerged as a specialized area not only in higher education and other research institutions but also in government and funding agencies (Barros et al., 2015; Nguyen, 2016). Olsson & Meek (2013) further argue that growth, for countries and their institutions, depends on three constants: adequate policies (including governance and management); sufficient resources and investment; and highly trained human capital(Olsson and Meek, 2013). This could be reinforced by using existing knowledge, in Africa and elsewhere in the world. Benchmarking could also be used to reveal this knowledge and provide a common base to estimate the level of development of the research management support, service and administration function in institutions (Kirkland, 2005). One consequence of this has been a dramatic growth in university research management systems in developed countries (Andren et al., 2004). However, the lack of such systems in African TIs as a whole and TIs in Ghana in particular threatens to further widen their comparative disadvantage in securing and managing internally and externally funded research projects (Bartels et al., 2016). This awareness is demonstrated among institutions themselves and although support has been received from some international donors to address the challenges, it has not yet succeeded in the creation of sustainable long-term structures at the institutional level (Kumi, 2019). In Ghana for instance, research management is in its embryonic stage in many TIs. It is observed that research management offices are plagued with underdeveloped structures, a lack of appropriate tools and resources, and inadequately trained professionals (Nchinda, 2002). Also, the required changes in institutional research management policies and strategic frameworks to drive the integration and progression of professionals in research management have been slow (Bosch and Taylor, 2011). Against this background, the researchers sought to assess the opportunities and constraints militating against the advancement of Research Management in the areas of policy advancement, sufficient resources and investment, and highly trained Research Managers and Administrators, in Ghana using an account from four institutions to draw inferences that result in effective and efficient management systems and structures to propel the growth of Research Management in TIs which may be replicated elsewhere.

METHODOLOGY

RESEARCH STUDY DESIGN

The study used a mixed-methods approach to expand and strengthen the study's conclusions. This approach combines both quantitative and qualitative research techniques, methods, approaches, concepts and language in a single study (Johnson and Onwuegbuzie, 2004). A concurrent Triangular Strategy was also employed for data collection and this enabled the concurrent collection of both quantitative and qualitative

data with equal priority placed on both, as Terell (2021) opined. Further, a multiple-case approach was used in four different institutions to explore in detail the similarities and differences existing in cases to support generalizability and prediction of theory. As Gallivan (1997) puts it, studying multiple cases makes it possible to build a logical chain of evidence. Literature was first reviewed on similar research conducted on the subject both globally and contextually. Primary data collection included a self-administered guestionnaire, expert interviews, direct observation of facilities, and a review of TI research management structures. The reliability of the questionnaire was determined by proofreading, pre-testing and re-testing to ensure fitness for purpose. The interview guide was designed and piloted with some senior academics with experience in research and Research Management. The survey tool was administered to Heads of Department, Institution Deans or Principals, Principal Investigators, Programme Directors, Research Support Staff in administration, finance, human resources, Institutional Relations Office, ethics, Intellectual Property Units and laboratories. Researchers also visited each of the institutions for key informant interviews, validation of information gathered, and quality assurance of data gathered. A consultation with experts and key informants was used to exhaust the list of all aspects of the structures and systems in managing research. The final dataset was cleaned to remove errors and inconsistencies that were detected through the entry process to ensure quality of data. The analysis of data was done by adapting Miles & Hubermann (1994) tree-staged data analysis technique: data reduction, data display, and conclusion drawing and verification.

The population was all faculty members of the four selected institutions (i.e. Kwame Nkrumah University of Science and Technology, Kumasi; University of Mines and Technology, Tarkwa; Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, Kumasi; and Kintampo Health Research Center, Kintampo) with interest in structures for Research Management and RM-related offices. Purposive and stratified sampling techniques were used. These ensured that all the selected institutions satisfied the criteria. It also ensured that all the different groups were represented to bring about homogeneity (within group) and heterogeneity (between groups). At the initial stage, a stratified sampling method was used to ensure that the four TIs selected were from the three zones in Ghana. These were the coastal zone dominated by Accra-Tema and Sekondi-Takoradi; middle zone with Kumasi as its centre; and the northern savannah zone (Ofosu-Mensah Ababio, 2003). The inclusion criteria included whether a particular tertiary institution i) is chartered, ii) has appropriate years of existence, iii) runs postgraduate programmes, iv) has research projects; v) has research management systems and structures. Equal weight was given to each criterion and institutions picked based on their scores.

Interviews and questionnaires were used to collect data for the study. The questionnaire was piloted in a small segment of the population within an institution with similar

characteristics as the actual participants for the study. The piloting was done to help confirm the precision of the questions, the duration of time to provide answers to the questions, and to ensure the validity of the study. Questionnaires were administered online and interviews were carried out by a trained research assistant. The data collected was double-checked to ensure correctness and completeness. Data collected from the field were then processed for further analysis. Data was also kept confidential only to be accessed by the researchers.

DATA ANALYSIS

Stata v16.0 (Stata Corp, College Station, Texas, USA) was used for data entry and analysis. Variables were statistically analyzed into descriptive summaries presenting them into tables and graphs.

ETHICAL CONSIDERATION

The researchers obtained ethical approval from the Committee on Human Research Publication Ethics (CHPRE) of the Kwame Nkrumah University of Science and Technology (CHRPE/AP/4533/21). Informed consent of the participants was sought and participation was voluntary. The participants' anonymity was assured by ensuring no traces of information led to the participants and confidentiality of the information gathered was respected.

RESULTS AND DISCUSSION

DEMOGRAPHICS

The Survey had a high response rate of 87.5%, with respondents having an average of 8 years' experience in their current department or office. This indicates a well-experienced group of participants, which strengthens the reliability of the findings. Of the respondents, 31 (88.6%) reported that their institution had an RM office for between 1 to 15 years, while 4 respondents (11.4%) said their institution did not have one. This is consistent with other studies showing that larger research institutions tend to have more established RM offices (Kirkland & Ajai-Ajagbe, 2013; Wedekind & Philbin, 2018).

Additionally, 25.7% of respondents expressed interest in having an RM office at their institution, highlighting a growing need for such services.

In terms of roles, 14 respondents (40%) were Principal Investigators (PIs), the largest group, followed by smaller numbers of Project Coordinators, Co-Investigators, Research Managers, and Research Assistants. This distribution is typical, as PIs often have more interaction with RM offices due to their involvement in grant applications, project management and the need to grow their grant portfolio (Martin, 2021). The small number

of Research Assistants (8.6%) is also expected, as they typically have less direct engagement with RM offices.

Most respondents (65.6%) learned about the RM office through their institution, which shows the importance of clear communication within organizations. About 80% of respondents had worked with the RM office, suggesting that those offices are actively supporting researchers within these institutions. This is similar to findings from Nyugen & Meek (2015), where research offices were central to successful research outcomes in universities and public research institutions. (See Table 1 for the Demographic results.)

Variable	Frequency (%)
Best description of Portfolio	
Co-Investigator	5 (14.3)
Principal Investigator	14 (40.0)
Project Coordinator	5 (14.3)
Research Assistant	6 (17.1)
Research Manager/ Research Administrator	5 (14.3)
Number of Years of RM Office since establishment	
1-5 years	12 (34.3)
5-10 years	17 (48.6)
10-15 years	2 (5.7)
No Research Management Office	4 (11.4)
Wishing for Research Management Office	
Yes	9 (25.7)
No	6 (17.1)
Not applicable	20 (57.2)
How did respondents find about Research Management	
A Colleague	2 (5.8)
Conference	8 (22.8)
My Institution	23 (65.6)
Other, i.e. social media	2 (5.8)

Table 1: Respondents' Demographics

Dealt with the RM Office	
No	7 (20.0)
Yes	28 (80.0)

SERVICES OFFERED BY THE RESEARCH MANAGEMENT OFFICES

The services offered by the Research Management offices considered in this research include pre-award services (includes: searching for funding opportunities, proposal development support, budgeting, letters of support and provision of institutional information in support of the proposal development), award services (includes: interpreting terms and conditions of grants, monitoring project budget, submitting reports on behalf of the project team, serving as a liaison between sponsors and the institution) and the postaward services (includes: offering advice, compliance monitoring with policies and procedures, monitoring project budget, submitting reports, project close-out procedures and interpreting the terms and conditions of the grant).

PRE-AWARD SERVICES

Pre-award services in grant management refer to the activities performed before the grant, cooperative agreement or contract is awarded ((Gonzalez, 2024). The results of this research indicate that with regard to services offered by the Research Management Office at pre-award stage, 31 respondents (88.6%) indicated that the office assists with the search for funding opportunities announcements, proposal development, budgeting, letters of support, and providing institutional information (Table 2). Many respondents found these services essential for submitting successful grant applications, and this aligns with studies showing that institutional support at the proposal stage increases funding success (Kirkland and Ajai-Ajagbe, 2013). Also, 30 respondents representing 85.8% indicated that the office assists in interpreting the terms and conditions of grants, monitors project budget, submits reports on behalf of the project team, and serves as a liaison between sponsors and the institution during the award stage of the grant cycle.

Table 2: Pre-Award Services Offered	t
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Variable	Frequency (%)
Search for funding opportunities announcements; Assist with proposal development;	31 (88.6)
Budgeting; Letters of support;	
Provide institutional Information	

AWARD SERVICES

The award services stage in grants management refers to the activities performed during the grant award process that ensures a smooth transition from the pre-award to the post-award stage. These services are crucial for ensuring that researchers comply with grant conditions and maintain good relationships with funding bodies, as indicated by 85.8% of the respondents (Table 3). Previous research (Wedekind and Philbin, 2018) has highlighted the importance of these services in ensuring the smooth running of funded projects.

Variable	Frequency (%)
Assist in interpreting terms and conditions of grants; Monitor project budget;	30 (85.7)
Submit reports on behalf of the project team;	
Serve as a liaison between sponsors and your institution	

Table 3: Award Services Offered

POST-AWARD SERVICES

The post-award services in grant management refer to the activities performed after a decision to award the grant has been made (Crane et al., 2023).

These services help ensure that projects achieve the desired objectives, meet regulatory requirements and are completed on time and within budget. Studies (Crane et al., 2023; Martin, 2021) show that post-award support is important for maintaining project integrity and fulfilling sponsor requirements. The results presented in Table 4 indicates that 28 respondents representing 80.1% stated that the research management office offers advice, monitors compliance with policies and procedures, clarifies administrative and financial regulations and requirements, and works with project accounting staff to ensure that awards are properly closed out.

Table 4: Post-Award Services Offered

Variable	Frequency (%)
Advice and monitor compliance with policies and procedures;	28 (80.1)
Clarify administrative and financial regulations and requirements of funders; Assist in responding to sponsor queries and requirements;	
Work with project accounting staff to ensure that awards are properly closed out	

A good number of the respondents reported that they were satisfied with the services of the Research Management Office in their institutions. Out of the 33 respondents, 16 (45.7%), indicated their satisfaction with the services of the Office. As regards professionalism, 17 respondents representing 48.6% confirmed the professional manner in which the Office discharges its duties. Support to grant applications/projects garnered 15 out of 35 respondents representing 42.9%, whilst satisfaction with research managers' skill set for the job attracted 13 out of 35 respondents representing 37.1%. It can be inferred from the percentages that although there was some level of satisfaction, there is room for improvement in the services rendered by the office by building the capacity of the staff to carry out their mandate. This is shown in Table 5 below.

Variable	Frequency (%)
Service	
Neither satisfied nor dissatisfied	1 (2.9)
Never had an interaction	4 (11.4)
Somewhat dissatisfied	1 (2.9)
Somewhat satisfied	11 (31.4)
Very satisfied	16 (45.7)
No response	2 (5.7)
Professionalism	
Neither satisfied nor dissatisfied	2 (5.7)
Never had an interaction	4 (11.4)
Somewhat satisfied	10 (28.6)
Very satisfied	17 (48.6)
No response	2 (5.7)
Support to grant applications/projects	
Neither satisfied nor dissatisfied	2 (5.7)
Never had interaction	4 (11.4)
Somewhat satisfied	11 (31.4)
Very Dissatisfied	1 (2.9)
Very satisfied	15 (42.9)

No response	2 (5.7)
Skill set	
Neither satisfied nor dissatisfied	3 (8.6)
Never had an interaction	4 (11.4)
Somewhat satisfied	13 (37.1)
Very satisfied	13 (37.1)
No response	2 (5.7)
Processes	
Neither satisfied nor dissatisfied	2 (5.7)
Never had an interaction	4 (11.4)
Somewhat dissatisfied	1 (2.9)
Somewhat satisfied	17 (48.6)
Very satisfied	8 (22.9)
No response	3 (8.5)

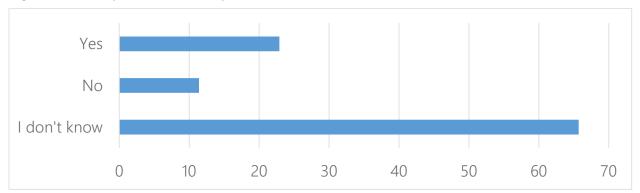
BARRIERS TO EFFECTIVE RESEARCH MANAGEMENT

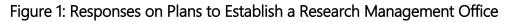
The respondents mentioned some of the barriers to effective Research Management as follows:

- Effective Communication
- Equipment for analysis
- Funding
- Research Management staff are not proactive
- Inadequate staff capacity for understanding and buy-in of RM concept
- Lack of clear policy, correspondence and resources
- Lack of institutional understanding of the role of research management and functions
- Lack of capacity on the part of some research managers in diverse requirements of different funding agencies
- No clear career path of progression for research managers in some institutions
- Lack of commitment on the part of University Management to put up structures and systems for effective research management
- Lack of understanding of research management processes
- Paucity of administrative support
- Research Office being too far away from clients
- Thinking that one size fits all in grant management

PLANS TO ESTABLISH A RESEARCH MANAGEMENT OFFICE BY INSTITUTIONS WITH NONE

The plan to establish a research management office by institutions was assessed and Figure 1 below presents the responses from the interviewees.





Understanding of the operations of the RM Office revealed several responses from respondents as indicated in Table 6 below.

Table 6: Understanding of the Operations of the RM Office

Variable	Frequency (%)
Database for funding opportunities and funding sources;	32 (91.4)
Standard operating procedures and guidelines for RM processes – pre-award, award, and post-award;	
Proposal development (science, budget, letters of intent/support, etc.);	
Lead the institution's intellectual property and technology transfer activities;	
Database for researcher/researcher expertise for collaboration;	
Innovative mechanisms for the institution and industry engagement;	
RM training resources – content for training (pre-award, award, and post-award processes);	
Liaison between sponsors and the institution's research team;	
Administrative support systems including bookkeeping for investigators;	
Research-related policies;	
Research dissemination and uptake tools (social media, open access, policy briefs, news articles, etc.)	

Don't know much	1 (2.9)
No idea	2 (5.7)

The respondent rate on the assertion that RM facilitates research and maximises research output was 60% in agreement or strongly agree with other respondents indicating varying responses as shown in Figure 2 below.

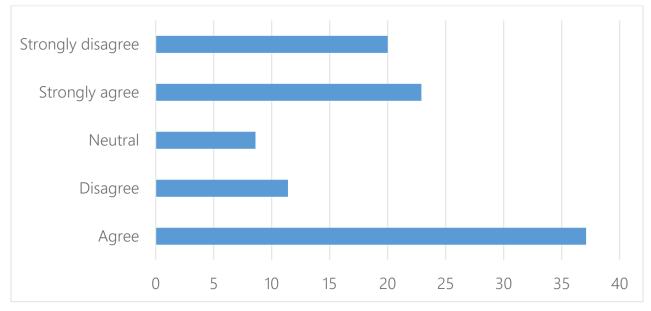


Figure 2: Respondents Rate on RM Facilitating Research and Maximising Research Output

THE CHALLENGES OF RM IN YOUR INSTITUTION

The challenges of RM in the four institutions were dominated by the lack of a professional development plan for research managers and administrators in the institutions. This is followed by lack of mentorship programmes and RM distinctive roles and progression in the institutional establishment as well as inadequate Information Technology (IT) and other support for RM to thrive. It therefore behoves TIs to put in place the necessary support systems and other measures to enable RM to function well in the institutions.

Table 7: Challenges o	of RM in the TIs
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Variable	Frequency (%)
Inadequate IT and other support infrastructure for effective RM operations	8 (14.6)
Lack of resources, e.g. educational resources, opportunities search strategies, etc.	12 (21.8)

Lack of mentorship programme for research managers and administrators	15 (27.3)
Lack of professional development plan for research managers and administrators	11 (20.0)
Lack of RM roles and progression in the institutional establishment	9 (16.4)

Responses from the four institutions' RM Offices on strategy / policies / operating procedures to guide their operations are shown in Figure 3 below.

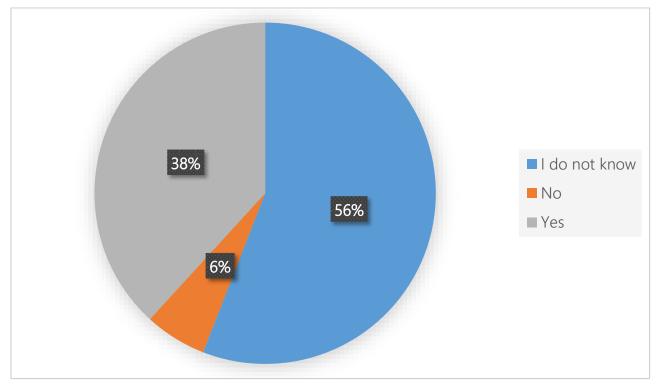


Figure 3: Existing Strategy / Policies / Operating Procedures

Figure 4 below shows the performance of the strategy / policies and operating procedures in the four institutions.

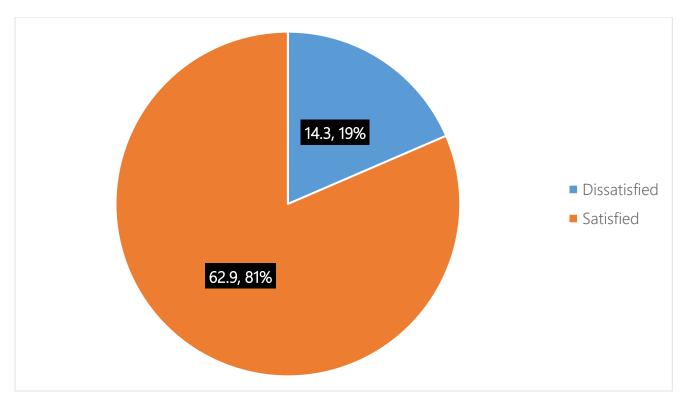


Figure 4: Performance

For those dissatisfied, they gave reasons as listed below:

- Beyond the policy, there is no drive for operationalization
- Inadequate policy and direction
- Non-existent policy in some cases
- Non-cooperation with partner university

Rating the performance of the Research Management Office, most of the respondents in the institutions expressed satisfaction with the performance of the office, as shown in Figure 5 below.

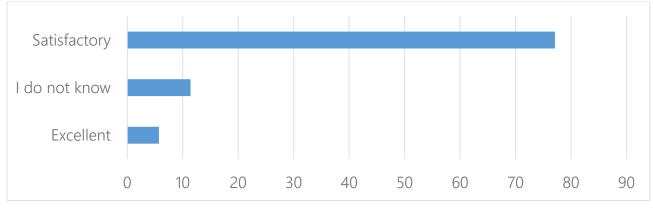


Figure 5: Rating Performance

The study revealed other constraints on the effective functioning of the RM office in institutions.

Variable	Frequency (%)
Lack of institutional interest in RM	7 (14.0)
Lack of institutional research strategy	8 (16.0)
Lack of proper coordination of research activities carried out in silos	11 (22.0)
Non-disclosure of research grant activities on the part of researchers	10 (20.0)
Lack of resources and capacity to operate and manage research office	14 (28.0)

Table 8: Constraints

HOW DO CONSTRAINTS AFFECT THE WORK DELIVERY AT THE RM OFFICE?

The study revealed that the constraints identified reduce the impact of research, make it difficult to deliver on the mandate of the office, place the RM office on opposite sides of clients, breed mistrust between RM staff/office and researchers, hamper the efficiency and effectiveness of the research manager's service delivery and limit the research output of the institution.

CONCLUSION

The study confirms the vital role of RM offices in supporting researchers throughout the entire research process—from securing funding to managing grants and completing projects. However, there is still a need for more RM offices in institutions that currently lack them.

The study concludes that there are RM opportunities as well as factors that militate against the effective delivery of RM services in GTIs. This seriously impedes the work of research managers on various fronts and hinders effort to deliver top-notch services to GTIs. On the other hand, RM in developed countries has seen dramatic growth in service delivery in the tertiary education space. Comparatively, such offices in developed countries are better resourced in human, infrastructure and material resources. The lack of such resources in GTIs threatens to further widen the disadvantage in securing and managing internal and external funding and other aspects of research, albeit there is growing awareness of this among GTIs and support from international donors to address these challenges. Suffice it to state that the support has not yielded the desired results, especially with the creation of sustainable long-term systems, policies and structures. That notwithstanding, research managers and administrators in GTIs are not relenting in their efforts to build capacity to deliver efficient and effective services to their clients. It is gratifying to note that research managers and administrators are joining research and innovation associations like the

West African Research and Innovation Management Association, the Society of African Research Innovation and Management Association, the Society of Research Administrators International and other professional bodies to build their capacity and to reposition their institutions in the scheme of managing research.

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BIOGRAPHIES

Bernard Asamoah Barnie is an Assistant Grants and Research Manager at the Department of Office of Grants and Research at the Kwame Nkrumah University of Science and Technology with over 10 years of experience in research management and its implementation, including Research Ethics. He has managed several research projects and is keen on advancing grants management among researchers. Florence Antwiwaah Aboh is a Senior Assistant Registrar in charge of Research and Innovation Management at the University of Mines and Technology, Tarkwa, Ghana with vast experience in institutional research management such as the grant cycle, implementation of federal research projects awards, Intellectual Property, Research Ethics as well as capacity building programmes for research management. She is a recognised Research Management Professional by the International Research Professional Council.

Kezia Gladys Amaning Adjei is the Head of Institutional Advancement at the Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, Kumasi, Ghana. Her work experiences span across grant sourcing, proposal writing and grant management. She is a Chartered Professional Administrator. Throughout her career, she has collaborated with renowned funders who have generated groundbreaking research outcomes which have impacted the world. She is passionate about education, generating new ideas and mentoring young research grant managers.

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